

Application No. 10/720,442
Reply to Office Action
November 15, 2004

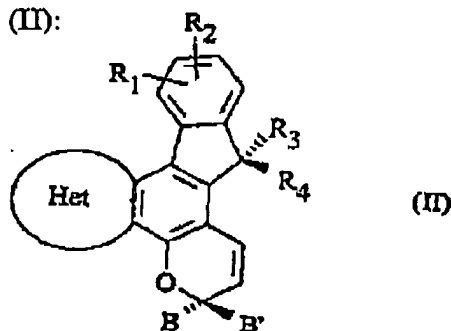
Amendments to the Claims:

The following listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1-7. (Canceled)

8. (Previously presented) A photochromic indenochromene compound corresponding to formula (II):



wherein

R₁ and R₂ represent radicals independently selected from the

group A, consisting of hydrogen, fluorine, chlorine, bromine, hydroxy, (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy, (C₃-C₇)-cycloalkyl which may include one or more heteroatoms, (C₁-C₆)-acyl, unsubstituted or monosubstituted phenyl, and unsubstituted or monosubstituted benzyl, wherein the phenyl or benzyl substituents are selected from the group consisting of (C₁-C₆)-alkyl and (C₁-C₆)-alkoxy; or

R₁ and R₂ together represent an annellated, unsubstituted,

monosubstituted or disubstituted benzo or pyrido ring wherein the ring substituents are selected from group A;

R₃ represents a substituent selected from the group consisting

of hydrogen, (C₁-C₆)-alkyl, and -OM, wherein M is a substituent selected from group A;

R₄ is a substituent selected from the group consisting of

hydrogen, hydroxy, (C₁-C₆)-alkyl, (C₁-C₆)-alkoxy, (C₃-C₇)-cycloalkyl, (C₁-C₆)-acyl; unsubstituted, monosubstituted, disubstituted or trisubstituted phenyl, benzyl, naphthyl, phenanthryl, pyrenyl, quinolyl, isoquinolyl,

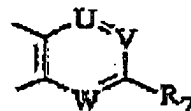
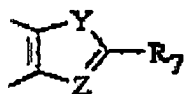
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benzofuranyl, thienyl, benzothienyl, dibenzofuranyl, dibenzothienyl, carbazolyl and indolyl, wherein the substituents are selected from group A; (C₁-C₆)-4-phenylalkyl and (C₁-C₆)-4-phenoxyalkyl, wherein the phenyl ring in 4-position in turn may be part of an additional photochromic pyran system; or

R₃ and R₄ together with the spiro carbon atom represent a

saturated and/or unsaturated ring with 5 to 8 carbon atoms, of which at most one may be substituted by a heteroatom selected from the group consisting of O, S and NR₅, wherein R₅ is selected from group A, and wherein at least one aromatic or heteroaromatic ring system selected from group E consisting of benzene, naphthalene, phenanthrene, pyridine, quinoline, furan, thiophene, pyrrole, benzofuran, benzothiophene, indole and carbazole, is annellated to the ring, wherein said ring system may have one or more substituents selected from group A;

the annellated ring (Het) represents a 5 or 6-member heteroaromatic ring corresponding to one of the following formulas:



wherein Y is selected from the group consisting of oxygen, sulfur and NR₅, and Z, U, V and W are each independently selected from the group consisting of nitrogen and CR₆, wherein R₆ and R₇ represent substituents independently selected from group A, or

R₆ and R₇ if they are ortho to one another together represent an unsubstituted or monosubstituted benzene ring wherein the ring substituents are independently selected from group A; and

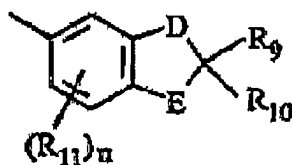
B and B' are each independently selected from the following groups a), b), c) or d); wherein

group a) consists of monosubstituted, disubstituted and trisubstituted aryl selected from the group consisting of phenyl and naphthyl;

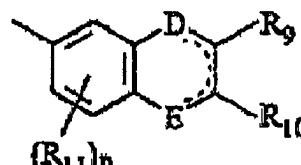
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group b) consists of unsubstituted, monosubstituted and disubstituted heteroaryl selected from the group consisting of pyridyl, furanyl, benzofuran-2-yl, benzofuran-3-yl, thien-2-yl, thien-3-yl, benzothien-2-yl, benzothien-3-yl, phenaziny, phenoxaziny, phenothiaziny and julolidiny; wherein the substituents of the aryl or heteroaryl in groups a) and b) are selected from the group consisting of the above-defined group A, amino, mono-(C₁-C₆)-alkylamino, di-(C₁-C₆)-alkylamino, monophenylamino and diphenylamino unsubstituted, monosubstituted or disubstituted on the phenyl rings, wherein the phenyl ring substituents in turn are selected from group A, pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, phenaziny, phenoxaziny, phenothiaziny, carbazolyl, unsubstituted, monosubstituted and disubstituted pyrrol, wherein the pyrrol substituents are selected from group A,

group c) consists of structural units with the following structural formulas (B) and (C):



(B)



(C)

wherein

D and E are independently selected from the group consisting of oxygen, sulfur, carbon or NR₈;

R₈, R₉, R₁₀ and R₁₁ are each independently selected from the group A; and
n is 1, 2, or 3;

provided that if D represents NR₈ in formula (B), E represents carbon,

or

d) B and B' together form an unsubstituted, monosubstituted or disubstituted fluorene-9-ylidene group or a saturated hydrocarbon group, which is C₃-C₁₂ spiro monocyclic, C₇-C₁₂ spiro bicyclic or C₇-C₁₂ spiro tricyclic, wherein the fluorene substituents are selected from group A.

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9. (Previously presented) A photochromic indenochromene compound according to claim 8, wherein the annellated heterocycle (Het) is selected from the group consisting of indole, benzofuryl, benzothienyl, thienyl, furyl, oxazolyl, imidazolyl, pyrimidinyl, pyrazinyl and triazinyl.

10. (Previously presented) A photochromic indenochromene compound according to claim 8, wherein B and B' are each independently selected from monosubstituted, disubstituted or trisubstituted phenyl groups, wherein the phenyl group substituents are selected from the group consisting of group A, amino, mono-(C₁-C₆)-alkylamino, di-(C₁-C₆)-alkylamino, monophenyl- and diphenylamino unsubstituted, monosubstituted or disubstituted on the phenyl ring; wherein the phenyl ring substituents in turn are selected from group A, pyrrolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, phenazinyl, phenoxazinyl, phenothiazinyl, carbazolyl, unsubstituted, monosubstituted and disubstituted pyrrol, wherein the pyrrol substituents are selected from group A.

11. (Previously presented) A photochromic indenochromene compound according to claim 8, wherein B and B' each independently represent a julolidinyl group.

12. (Canceled)

13. (Previously presented) A photochromic article comprising a synthetic resin body and at least one photochromic indenochromene compound according to claim 8.

14. (Previously presented) A photochromic article according to claim 13, wherein said synthetic resin body is an ophthalmic lens.

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